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ABSTRACT

The major purpose of the workshop, "Setting a Global Agenda for the Nineties," was to identify an agenda for International Council for Distance Education (ICDE)-sponsored research. Three papers that were prepared for the workshop make up the major part of this report: (1) "Marrow Bone Thinking: Toward a Fair Representation of Qualitative Research in Distance Education" (Elizabeth J. Burge); (2) "Concepts of Experimental Inquiry in Distance Education: 'A Systems Perspective'" (Dan O Coldeway); and (3) "On European Distance-Education Research" (Borje Holmberg). It is noted in the preface that outcomes of this workshop include an agenda of eight projects and the development of the Distance Education Online Symposium (DEOS), which allows researchers to communicate with colleagues worldwide using BITNET, INTERNET, EARN, and other internationally accessible computer conference networks. Three appendixes contain the agenda of the workshop program, research questions arising from the workshop, and a list of the names and addresses of the workshop participants. Each paper includes an extensive bibliography. (ALF)

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International Perspectives on Distance Education Research

Papers Presented at
the Preconference Workshop
ICDE World Conference
Caracas, Venezuela, November 2-4, 1990

Elizabeth J. Burge

Dan O Coldeway

Börje Holmberg

Number 5 in the series **Research Monographs**

**American Center for the
Study of Distance Education
College of Education
The Pennsylvania State University**

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PREFACE

The three papers that constitute this monograph have their origin in a workshop with the title "Setting a global agenda for the nineties" organized by The American Center for Study of Distance Education in November 1990 in Macuto, Venezuela. Held in conjunction with the 15th World Conference of the International Council for Distance Education (ICDE) the Workshop brought together around fifty persons from more than a dozen countries. A major aim of the workshop was to identify an agenda for ICDE-sponsored research.

As an outcome of the workshop an agenda of eight projects was developed. In several cases individuals identified themselves as having interest in developing further contact with each other with a view to pursuing some aspects of these research problems.

As preparation for the workshop several participants were asked to prepare presentations. Among these, Dan Coldeway and Liz Burge were invited to lead an examination of methodological issues and Börje Holmberg was asked to contribute to a world survey of distance education research. They have subsequently revised their presentations in a form suitable for publication in this monograph. To give better understanding of the context in which these papers were presented, the Macuto Workshop program is provided in an appendix to this monograph, together with the names and addresses of persons who participated. The list of research questions generated by workshop participants is also provided. As far as is known at the time of writing, there has been no significant progress in implementing these research projects, though at least one has been developed into a substantial proposal.

One very important outcome of the Macuto Workshop–although there were other, converging interests–has been the development of DEOS the Distance Education Online Symposium. Using BITNET, INTERNET, EARN and other internationally accessible computer conference networks, DEOS is a medium that allows researchers to communicate with colleagues worldwide, easily and at minimal cost. One year after Macuto there are some 600 participants in DEOS in around thirty countries. Thus the Macuto Workshop represents a significant first step towards the implementation of an international research agenda by identifying some of the people who are interested in international distance education research, by identifying some of the main questions that have to be worked on and by leading to the setting up of an electronic network that

facilitates communication among researchers worldwide. It is to be hoped the papers in this monograph will be further encouragement to researchers and others, wherever they are located to begin to implement the international agenda.

DEOS

Distance Education Online Symposium

In April, 1991, the Penn State based American Center for the Study of Distance Education established **DEOSNEWS**, a free, weekly, international, electronic journal for distance education. Morten Flate Paulsen is its editor and systems designer. **DEOSNEWS** has more than 900 subscribers in 35 countries. However, it is difficult to estimate the total number of **DEOSNEWS** readers since some of the subscribers are bulletin boards that are accessed by large numbers of people. Scholars, researchers, administrators, and students are invited to submit articles about distance education to **DEOSNEWS**. Please send your articles to: **MFP1Ø1@PSUVM.PSU.EDU**

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PART I

Marrow Bone Thinking: Toward a Fair Representation of Qualitative Research in Distance Education

Elizabeth J. Burge

Marrow Bone Thinking: Toward a Fair Representation of Qualitative Research in Distance Education

Elizabeth J. Burge

Introduction

Philip Jackson is giving his Presidential Address at the 1990 Annual Meeting of the American Educational Research Association in Boston. He reminds his audience that the value of conclusion-oriented research (as distinct from decision-oriented) is that it will change "the prevailing view" when its results show that the researchers found their data to be complex and puzzling:

> Their words encourage us to envision something far more complicated and dynamic. They speak of a restlessness emerging out of discussion. They talk about findings that seem to conflict, which implies the possibility of being mistaken. They depict investigators as being puzzled, as noticing things that as yet cannot be described in words, phenomena for which language is lacking. They speak of boundaries getting blurry, of topics merging into one another. Investigators, we are told, "find themselves assembling what they know in a new way," almost as though they were doing so unconsciously or perhaps even against their wills. (Jackson 1990, 9)

If we are to help change "the prevailing view" with complex, exciting and challenging new research, Jackson concludes, we must

> become self-reflective about our research goals and methods and what they mutely and perhaps inadvertently communicate about our enterprise to the world at large. It requires, among other things, that we conscientiously explore our most deeply held assumptions and presuppositions and that we do so with a directness, a candour, and a tenacity that has seldom typified our work in the past. It was Yeats (1958) who said "God guard me from those thoughts men think/In the mind alone; He that sings a lasting song/ Thinks in a marrow bone" (p. 236). Yeats's prayerful entreaty issued from the soul of a poet, yet its truth, it seems to me, applies to us all. "He that sings a lasting song thinks in a marrow-bone." Those are words we all might take to heart. (Jackson 1990, 9)

How many "lasting songs" do we have in the distance education research repertoire? How many of us think in our marrow bones? Gender-exclusive language apart, Yeats's poetry and Jackson's reflections are relevant for us, but we have to rely on more than

God's protection if we are to challenge prevailing views and produce research results that provoke, excite, and unsettle. To progress from thinking in "the mind alone" to thinking in our marrow bones, we have to make greater use of the naturalistic research paradigm.

This paper therefore deliberately focuses on that paradigm in order to clarify its purposes, methodologies, and issues. This focus is not to deny the relevance and place of the positivist paradigm, nor to deny that methodologies from both paradigms can be used within individual research projects. Rather the focus is meant to restore the balance of attention in favor of the naturalistic and to point out that methodologies in this paradigm, contrary to some beliefs, are as demanding of research skill as are those of the positivist paradigm.

The predominance of the positivist paradigm has been challenged only comparatively recently. For decades many educational researchers carefully constructed experiments to test hypotheses, or analyzed numbers in different ways to produce descriptive statistics about events, resources, or outcomes. Some of us read these reports and saw their limits in terms of how the real and "messy" world actually operated. By the 1970s the perspective was changing:

> Quantitative methods, relying on the hard science paradigm, had not delivered. As the vision (toward another paradigm) widened, qualitative approaches caught people's imagination (see Scriven 1972). And so, qualitative research mushroomed in education. (Bogdan and Biklen 1982, 21)

The 1970s in fact were characterized by strong debates about the merits of each paradigm and its methodologies—to the point where Rist had to call for the positivists to change their attitude from "disdain" to "detente" (Rist 1977). The effects of that disdain have diminished, especially among researchers who are sensitive to "marrow bone thinking," who are prepared to listen and look in quiet appreciation at how people make meaning and act in their worlds: "most major neopositivist methodologists...have shifted toward more perceptual, context-embedded, interpretive inquiry" (Miles and Huberman, 1990, 343). The literature on this second type of inquiry—the naturalistic paradigm—and its associated qualitative methodologies is now extensive (see Appendix 1). Earlier opposition to the naturalistic/qualitative has given way to sophisticated discussions for practice (e.g., Eisner and Peshkin 1990; Gage 1989; Eisner 1988), arguments for compatibility with the positivist/quantitative paradigm (e.g., Jaeger 1988; Patton 1988; Howe 1987; Firestone 1987), arguments against mixing the paradigms and their methods (Guba and Lincoln 1988), and greater use of qualitative approaches in educational evaluation (Guba and Lincoln 1989; Fetterman 1988; Patton 1982), in adult education

(Merriam and Simpson 1989) and in disciplines other than education (e.g., Cobb and Hagemaster 1987; Morgan 1983; Glaser and Strauss 1968).

But what of distance education? Did it show evidence of these changes? Could we claim much marrow-bone thinking, or many research examples of "conscientiously [exploring] our most deeply held assumptions and presuppositions [done so] with a directness, a candour and a tenacity..." (Jackson 1990, 9)? We could not and indeed still cannot claim a fair representation of both paradigms (Hotchkis 1990; Morgan 1990; Kember, et al. 1990; Cookson 1989; Moran 1989; Minnis 1985; Morgan 1984), but as is indicated later, some progress is evident.

Minnis has reflected, with some sadness I suspect, on the condition of distance education research, which

> is heavily dependent on psychological paradigms which, despite the strengths associated with such paradigms, tends to reduce the problems of distance education to ones which are amenable to the manipulation of psychological variables only (Coldeway and Spencer 1982; Keegan 1982; Kaye and Rumble 1981). What little theory exists in distance education is usually praxiological, deriving more from experience in the sanctioned "practical" affairs of running programs than from systematic and reflective critique. (Minnis 1985, 190–91)

Cookson's review of research into learners and learning in distance education is equally bleak in its recognition of current limits on our knowledge:

> The articles and dissertations examined manifested a predilection for comparative analyses of distance education methods and of factors posited to influence student outcomes. Dropout or persistence of student[s] enrolled in correspondence study constitute the most frequently scrutinized phenomenon. Research findings suggest a range of institutional interventions that can profitably be applied to optimize the satisfactory learning experiences of distance education students. Yet to be examined in detail is the nature of the adult learning process, which attends the generation of outcomes in distance education. (Cookson 1989, 30–31)

Another researcher has deplored the "reality rape" of some statistical analyses and argues for an "interpretive approach (to) give the most meaningful rendition of what's out there [and do] the least conceptual damage to people in their human interactions" (Hotchkis 1990). Prior to this observation, Haynes (1983) tentatively but accurately identified the research problem:

> Looking through these papers...there emerged perhaps a steadily growing realization of the limits of a simplistic, mechanistic view of the use of feedback and evaluation in improving course presentation....But there was also a sense of remoteness from students in spite of efforts to include individual students' comments alongside statistical data, and I wonder whether we should not begin to examine more closely students' perceptions of the role of various components in a course and compare them with those of the course team. (In Morgan 1984, 255)

In an insightful and frank analysis of barriers to adoption of the naturalistic paradigm, Morgan is realistic and hopeful in his summary:

> ... it seems clear that the silent revolution identified by Fetterman (1989) has not really occurred in distance education. However, important initiatives are in progress. The development and elaboration of the *"new educational technology,"* which goes beyond the rational-technicist traditional approaches, will provide a location for theory which takes account of the social and political contexts of the learner, teacher and the institution. (Morgan 1990, 20)

Without the deliberate use of qualitative methodologies and the naturalistic paradigm, we will continue to produce examples of limited approaches such as the following one from a distance education research institute. In a recent article outlining their research goals and methods, the authors made no mention of any methodology apart from "experimental projects with model character" which "should contribute further to the scientific grounding of this know-how [about independent study materials]" (Baumeister, Friedrick and Mandl 1990, 16–17). The apparent limitation here in research paradigms and methodologies contributes to what appear to be untested assumptions about what is important to research; for example in a paragraph about the need to design study materials which "take over [the constant control for the teacher]," the authors state their goal in words which would indicate a limited awareness of the complex contextual factors in learning, many of which are beyond the educator's control (and always will be). Their words also reflect their political and social orientations in that they appear to show an unquestioned authoritarian view of the teacher's role which many adult and distance educators now find inappropriate, especially given the new interactive technologies:

> In (face-to-face instruction), important teaching functions such as motivation, selection, sequencing and presentation of the teaching materials, diagnosis of learning response and diagnosis-based presentation of content, practice, the transfer of what has been learnt to new situations and other functions are under the constant control of a teacher

> who is physically present. Self-study materials—texts, pictures, videos, PC-learning programs and decentralized, multi-media learning environments based on these—must be designed in such a way that they can take over these functions to a large extent. The development and design of independent study materials therefore necessitates a thorough analysis of the individual processes occurring under the conditions of independent study: the assimilation, processing, recall and application of new knowledge. (Baumeister, Friedrick and Mandl 1990, 16)

There appear to be no indications that any significantly qualitative research methodologies would be part of the desired "scientific grounding," nor that the researchers were struggling with epistemological and ontological issues relating to either the positivist or the naturalistic paradigms. What then is the naturalistic paradigm and its attendant qualitative methodologies? Why argue for its greater use in distance education?

Naturalistic Paradigm Characteristics

There exist a number of lucid and comprehensive explorations of the two paradigms, e.g., Gage (1989); Fetterman (1988); Guba and Lincoln (1988); Patton (1986), particularly in terms of their ontology and epistemology, not just methodologies. Firestone (1987) argues that four key differences separate the purely naturalistic paradigm from the purely positivist one. In terms of assumptions made about "reality," there is no ultimate truth about how people operate, rather "reality" is social construction developed as individuals privately define and interpret their world. In terms of research objectives, the researcher seeks an understanding of all the richness, complexity, and diversity of the individual's contexts and interpretations, and from that individual's perspective. In terms of what the researcher does, he/she is the primary instrument for gathering data and he/she becomes "immersed" in the whole process; i.e., not detached, not just "experimenting," not seeking to prove or disprove already constructed hypotheses, not assuming that there is always an objective "truth" beyond the knowledge of individuals. The researcher seeks to work naturalistically, i.e., to go into the field, disturb it as little as possible, and look holistically at all the contextual factors and events in that natural setting. The researcher must have the key characteristics of responsiveness, adaptability, the ability to process data as it is collected (so that analysis guides further enquiry), the ability to clarify and summarize (and get validated) the participants' contributions, and to probe the idiosyncratic and the unexpected (Taylor and Bogdan 1984). The researcher is working toward "an increased

understanding of the phenomenon by clarifying concepts, generating hypotheses or constructing explanatory frameworks" (Merriam and Simpson 1989, 90).

> We undertake qualitative inquiry not so much from our recognition that we do not know all the answers to our problems but rather from an appreciation of the fact that we do not know all the questions. (Edson 1988, 45)

This approach in its purest form is a profound contrast to the positivist's experimental, hypothesis-testing approach.

> By the term qualitative research we mean any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification. It can refer to research about persons' lives, stories, behavior, but also about organizational functioning, social movements, or interactional relationships. Some of the data may be quantified as with census data but the analysis itself is a qualitative one. (Strauss and Corbin 1990, 17)

The naturalistic researcher starts with taking nothing for granted, using an open mind, looking to describe a phenomena in its context and develop questions for further research. Once that exploration and description yields interpretations, the researcher can, for example, propose hypotheses or conduct further in-depth inquiry, using whatever methodologies are appropriate.

Qualitative approaches are used for various reasons. Strauss and Corbin (1990), for example, list these reasons: when very little is known about a phenomenon, or when more detail is required than can be given using quantitative methods, or when a different or novel perspective needs to be applied to an already well documented phenomenon, or when the research problem itself needs a qualitative treatment, or, finally, when the researcher holds a strong conviction about the use of the naturalistic paradigm for her/his discipline. Patton (1980), for example, has listed sixteen conditions that demand a qualitative approach in evaluation studies. The goals of qualitative methodologies have been summarized most succinctly by Strauss and Corbin:

> The research findings may be used to: clarify and illustrate quantitative findings, build research instruments, develop policy, evaluate programs, provide information for commercial purposes, guide practitioners' practices, and serve political ends, as well as for more scientific purposes such as the development of basic knowledge. (Strauss and Corbin 1990, 21)

In reality, the use of either paradigm has to be clearly understood, especially in ontological and epistemological terms. Researchers who have a clear ontological orientation know when to use either paradigm on its own and when to use the methodologies and tools of each one in the same project; for example, when to collect and use descriptive statistics to complement or triangulate qualitative data. For example, the distance education research of von Prümmer and Rossi (1990) used methodologies from both paradigms on the understanding that "the researchers knew the limits of their quantitative data, made their research values and intentions known to their participants, and gave them opportunities to engage in dialogue directly with the researchers" (von Prümmer 1990).

Another distance education example of integrated use of methods would be the decision to continue the mailing of closed question course evaluation instruments in order to get necessary descriptive statistics, but to add a qualitative perspective by selecting a very small sample, ten or twenty students, for relatively unstructured but in-depth interviews, and using a grounded theory approach to inductively analyze the data. An innovative administrator could ask for this latter approach, arguing that depth of detail is worth more than breadth. The results would illuminate aspects of learners' experiences with the insights and rich contextual description (that otherwise would be lost), and thereby be transferable wherever the described perceptions and experiences overlap with those of the reader. A study at the Ontario Institute for Studies in Education, for example, achieved just that result, with some unanticipated results for the researchers (Fales and Burge 1984). The work of Grace (1990); Holt, Petzall and Viljoen (1990a, 1990b); Inglis (1989); Brindley (1987); Kelly and Shapcott (1987); Taylor and Morgan (1986); Gatz (1985); Gibbs, Morgan and Taylor (1984); and Morgan (1984) are specific examples of our emerging and significant use of qualitative methodologies to illuminate learners in their natural settings.

Particular credit and appreciation is due to the pioneering work over the last decade of the Study Methods Group at the Open University (UK) and the consequent work of their Australian colleagues represented most recently in the engaging writings edited by Evans (1990a) and Evans and Nation (1989).

Future uses of qualitative methodologies in distance education could address questions such as the following, which I believe are crucial as we adopt more of the new interactive technologies:

- How do learners think they go about learning?
- Whose values have supported the widespread use of the term "independence?"
- Does that term have any meaning for learners?, and, if so, Is it applicable to women and men?

- What events during a course do they experience as stressful, as significant, as energizing?
- Do they experience rhythms and phases in their learning?
- How do their emotional processes influence their thinking?
- Is the term "support" all that meaningful to learners?
- How do their life contexts relate to their learning?
- How is power seen to be exercised by learners and the teachers?
- Where are the differences in how females and males go about learning?
- How do learners use interactive media?
- How do tutors think they tutor?
- How do part-time tutors perceive the organization?
- What kinds of relationships exist between learners and tutor and do they change over time?
- How do learners cope with educators who they perceive to be incompetent?
- How do leaders describe their leadership in action?
- What are the impacts of earned leadership behavior (as distinct from titular leadership)?

If we were to answer even half these questions in depth and across various cultural and social contexts, we would build some significant theory and some working hypotheses for continuing study.

Additional questions will emerge from studies in critical reflection:

> ...the process through which human beings use their analytical powers to assess elements of their lives against their explanatory frameworks (theories). Critical reflection is the precursor to change because, through the recognition of human agency, it encourages people to seek to improve lives in their own terms. (Evans and Nation 1989, 10)

Two classics have emerged already—David Harris's germinal analysis of the concepts of openness and closure (1987) and Evans and Nation's stimulating collection of critical reflections on practice and research (1989). Others are joining the field—e.g., Burt on critical examinations of the dominant ideologies at work in institutions (Burt 1989). Evans argues that we must uncover and critique our embedded theories so that we monitor the direction of our professional travelling; to understand those theories and their origins as they influence the "subtle driving of distance education further along the road to instructional industrialism" (Evans 1990b, 36).

Methodological Issues

None of the qualitative methodologies for the naturalistic paradigm are soft options! Part of their activity was (calmly) captured by Holt, Petzall and Viljoen (1990b, 158):

> While anybody wishing to become involved in qualitative research in distance education would be well advised to study its philosophical foundations, processes, and outcomes, we would also contend that this form of research can only ever be fully understood by experiencing it in the field. There is a strong experiential component to undertaking successfully qualitative research in distance education settings. (1990b, p. 178) Qualitative research is not characterized by a single, discrete process of data gathering, analysis, interpretation, and writing up of results. It is essentially iterative in nature with much movement between the student world (data gathering) and academic world (analysis, interpretation, and presentation of work). Often checks on the reliability of the investigator's interpretations can be found back in the students' world when students are provided with the opportunity to assess whether "recognizable realities" exist in the researcher's work, as presented to them, on their perceptions of what they do and why they do it. (1990b, p. 158)

The methodologies have to lead toward "concrete depiction of detail, portrayal of process in an active mode, and attention to the perspectives of those studied" (Patton in Firestone 1987, 20). Sound qualitative studies illuminate complex interactions, propose new questions, challenge existing assumptions, help us to appreciate how other people construct meaning in their lives, and expand our earlier frames of reference (Edson 1988, 45). The development of these features demands skills, attitudes, and self awareness from the researcher and detailed attention to academic rigor—or what Lincoln and Guba (1985) name as "trustworthiness." We have to know, for example, why we should choose a phenomenological method to study an adult learning context (Stanage 1987), instead of a case study (Merriam 1988) or an ethnography (Wolcott 1988) or a grounded theory study (Glaser and Strauss 1967). As each method has been discussed at length, we do not need another summary here. Distance education researchers can refer to writers such as Strauss and Corbin (1990), Kirby and McKenna (1989), Strauss (1987), Taylor and Bogdan (1984), and Miles and Huberman (1984) for strategies. What is relevant here is a review of what I consider to be three overarching qualitative issues, regardless of specific methods, that affect the maturation of distance education research.

Now that many researchers are out of the "intellectual cul-de-sac" of exclusively quantitative methods and have acknowledged that "generalizations decay" and "statistical

realities do not necessarily coincide with cultural realities" (Rist 1982), how do they claim trustworthy qualitative data and findings when working in the unpredictability and complexity of natural settings? Do the traditional criteria of validity, reliability, and objectivity still apply?

Trustworthiness has been discussed at some length (e.g., Guba and Lincoln 1988; Smith 1984). Lincoln and Guba (1985), in their philosophical and strategic treatments of this issue, argue that the naturalistic paradigm still has to answer the generic questions about a study's truth value, applicability, consistency, and neutrality; but each aspect is covered, respectively, with its own criteria of credibility, transferability, dependability, and confirmability. In order, each is the naturalistic paradigm's parallel to the validity (internal and external), reliability, and objectivity criteria of the positivist paradigm. Clearly a qualitative researcher is not aiming to prove a null hypothesis nor try to create the objectivity in a distanced relationship with people called "subjects." Nor is she/he aiming to produce generalizations or laws that are context or time free (as in the positivist definition): she/he is trying to understand how people behave in a context of multiple constructions of reality and has to produce findings that provide (a) proof that his/her interpretations have been approved by the actors (credibility); (b) a rich, thick description of setting and interaction so that the reader can be helped to judge how transferable are the findings to his/her own setting (transferability); (c) evidence that instabilities and changes originating in the phenomena or the research process have been accounted for (dependability); and (d) evidence that the data is reliable because it is confirmable (confirmability). Specific strategies for meeting these criteria and the criteria for authenticity are outlined in Lincoln and Guba (1985). Some people have applied those criteria into proposal checklists (Cobb and Hagemaster 1987) but it remains to be seen how the checklists may be used in distance education research.

The second overarching qualitative issue is that of sexist bias. It affects qualitative methodologies as much as it does quantitative ones, but the issue generally has been treated seriously only within the last decade (Eichler 1988). Despite the publication of guidelines for nonsexist language and the existence of many scholarly articles, some education research still shows evidence of what Eichler categorizes as four primary sources and three derived sources of sexist bias. The primary sources are androcentricity, overgeneralization, gender insensitivity, and double standards. The early work of Carol Gilligan (1982) on the developmental psychology of women is now a classic case of a researcher correcting previous research results which were not only based on exclusively male subjects, but also had been generalized to include the female experience. Another interpretive error, for example, has been the use of a male-oriented view of the world (patriarchy) to argue that

women "subjects" were "deficient" because they did not conform to predictions about behaviors that were, in effect, based on male expectations and socializations. Belenky, et al. (1986), in a ground breaking study about how women know themselves and their worlds point out one major limitation of research originating in Western traditions that attend to the male stream of experience:

> Thus, we have learned a great deal about the development of autonomy and independence, abstract critical thought, and the unfolding of a morality of rights and justice in both men and women. We have learned less about the development of interdependence, intimacy, nurturance, and contextual thought (Bakan 1966; Chodorow 1978; Gilligan 1977, 1979, 1982; McMillan 1982). (Belenky, et al. 1986, 6-7)

The relevance of this quotation to the distance education literature can hardly be underestimated! Distance education researchers must realize that readers of research reports are now much more aware of sexist bias, be it overt or covert.

Even if none of these analytical mistakes are made, there is a sub-issue that relates to the researcher being the primary instrument for data collection. The issue is one of impact. A key example is the gender of the researcher. Consciously or subconsciously, research participants invariably will react to a female researcher in ways different to a male researcher. Gender socialization is so ingrained and beyond conscious awareness for many people that it takes particular consciousness-raising to see it and manage it. A male researcher conducting in-depth interviews, for example, can never assume that female participants in the study will give him the same data as they would to a female researcher.

Distance education researchers have to acknowledge and deal with the issue of sexist bias just as our colleagues in other disciplines have. We have the generic guidelines (some of which have been around for over a decade, for example, those of the American Psychological Association) and the beginnings of serious documentation regarding how women do and do not get access to courses, learn, teach, manage, evaluate, and conduct research in distance education (*Journal of Distance Education*, V(2), 1990; Grace 1990; Burge and Lenskyj 1990; Coulter 1989; Faith 1988; Kirkup 1988; Kirkup 1986). The relatively few women publishing researchers in distance education who are feminists are publicly claiming that perspective and values orientation, with, I hope, no loss of credibility from their male readers.

The third issue is just as fundamental, and is attracting scholarly attention across the disciplines. It is "the possibility that the phenomena studied in the social and behavioral sciences are essentially unpredictable and indeterminate" (Cziko 1989, 17). Cziko presents

five convincing, indeed marrow-bone level, arguments to say that prediction and control experiments will never be successful; that we should hope instead for only temporary understandings. His case rests on individual differences of humans, chaos theory, the evolutionary character of development and learning, the roles of consciousness and free will in human activity, and quantum mechanics theory.

Essentially chaos theory tells us 1) that it is impossible to predict an outcome over a progression of events, even though strict causality can operate at each single event in the progression; 2) that the dependence on initial conditions for the outcome can be so sensitive as to cause large and/or unpredictable processes for that outcome, and 3) that patterns and sequences can be found in apparently chaotic conditions, if only we know how to detect them (Briggs and Peat 1989; Gleick 1987; Prigogine and Stengers 1984). The now famous "butterfly effect" was originally developed in a meteorological context: the flapping of a butterfly's wings in Brazil could eventually start a tornado in Texas. This theory has enormous implications for research into the many inter-relational dimensions of teaching and learning; e.g., how do home/work life factors affect course learning outcomes? Can chaos theory help us better understand course withdrawal and completion? Can it help illuminate patterns of energy and attention in learning? Can it help explain how new information confronts existing conceptual frameworks?

If we accept an evolutionary approach to learning (argues Cziko), i.e., that the random variation and natural selection applies as it does in the natural world, then we have to accept that:

> Even if a previously found "effective" learning environment could be replicated exactly, it would be very unlikely to lead to the same learning outcomes, even in an identical physical environment using genetic clones of the original teacher and students. (Cziko 1989, 20)

The fourth Cziko argument against prediction and control approaches to research is based on human consciousness and free will. Our complex and creative behavior cannot be known in advance—it is not a deterministic system, nor is our consciousness "available" to a researcher for experimentation.

The fifth and final argument that Cziko uses to press for descriptive and interpretative research in education is based in quantum mechanics. Scientists have changed their thinking from a Newtonian view of the world as predictable and clock-like in its operation to a view that recognizes the random behavior of subatomic phenomena. Researchers therefore have to think about probabilities in behavior rather than predictabilities. Other aspects of quantum mechanics, e.g., a simple measurement of a particle can change that

particle, or "that the uncertainties and probabilities observed in quantum phenomena are intrinsic to the phenomena themselves and not the result of incomplete knowledge" (Cziko 1989, 23) must surely have relevance to the worlds of learning and teaching.

We must apply Cziko's arguments to distance research. We must enlarge our boundaries of experience and exploration; use qualitative methodologies to gather and interpret people's multiple constructions of reality. We can show how context contributes to meaning whether our research participants are learners, tutors, policy makers, evaluators, learning designers, etc. We can "find [ourselves] assembling what [we] know in a new way." "Marrow bone thinking," those qualitatively oriented methods that will create the "lasting songs" of Yeats's plea, demand research that is holistic, not reductionist; cumulative, not repetitive. It also demands that we, as thinking and feeling humans involved with our research participants, be open and articulate about ourselves, our values, and our meaning-making.

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APPENDIX 1

Qualitative Research: Goals, Methodologies and Issues
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PART II

Concepts of Experimental Inquiry in Distance Education: "A Systems Perspective"

Dan O Coldeway

Concepts of Experimental Inquiry in Distance Education: "A Systems Perspective"

Dan O Coldeway

Introduction

The concept of research in distance education is receiving a growing amount of attention. Holmberg (1987) made a case that distance educational research has "come of age." Holmberg's analysis of both the quantity and quality of research in distance education indicated that indeed distance educational research had grown rapidly over a ten-year period. Further support for this notion is also provided by the interest shown in the distance educational research symposium held at The Pennsylvania State University and hosted by Michael Moore in 1988. That symposium attracted considerable world-wide interest and resulted in several publications, special readings (Moore and Clark, 1989), and a book (Moore 1990). The pre-conference workshop at the International Conference on Distance Education in Caracas, Venezuela on research in distance education is further testimonial to a growing interest in this area.

Although the methodological variations available to researchers in distance education are many (see Coldeway, 1988 for a review) the focus of this paper is on experimental methods in research on distance education. More precisely, the concern here is on distance educational inquiry and the steps necessary to inquire about distance educational phenomena.

Establishing Paradigms for Distance Educational Inquiry

Establishing paradigms of inquiry in a new field is always a difficult task. Within the field of distance education it is made even more difficult by the wide range of interventions associated with an even wider range of cultural, geographical, and political structures. Moreover, as Holmberg (1987, 16) has pointed out research can have as its incentive an administrative and management motivation, a "kind of meta study of the organization (university, etc.)." Research guided by institutional loyalty, political need, or management function may differ dramatically from inquiry for scholarship's sake.

Finding paradigms for distance educational research is not an easy task in itself. Coldeway and Spencer (1982) argued that Keller's Personalized System of Instruction (PSI) could serve both as a paradigm for designing distance educational systems and for

conducting distance educational research. Although that case can still be made, it became apparent that PSI is viewed by distance educators as having limited generalizability independent of the fact that the sheer volume of inquiry into PSI is extensive and logically the PSI framework is closely aligned with many distance educational applications. The fact that most of the variables in distance education have been researched in another context does little to assist a researcher interested in establishing a body of knowledge associated directly with distance education or a distance educational system. A research paradigm or methodology is important.

A related problem to the above is that distance education is more than distance instruction and/or the effect of the distance education experience on learners. There are a number of variables of potential interest to researchers that go beyond instruction and learners, and focus on factors of an organizational, political, administrative, interpersonal, cultural, and financial nature. The reality is that these factors also interact, making inquiry into primary effects difficult, if not impossible, in many cases. What appears to be required is a super-ordinate approach to planning, designing, implementing, and evaluating inquiry into distance education.

A Systematic Approach to Distance Educational Inquiry

A central thesis in this paper is that distance educational inquiry of an experimental nature should be conducted systematically. This section will identify some of the steps that can be followed to guide inquiry.

Figure 1 depicts a systems model for conducting experimental inquiry into distance education (or any experimental area, for that matter).

The primary input into the systems model is a question or problem facing the distance educational researcher. Asking the right question can be the key to effective scientific inquiry, so the activity that proceeds entry into the systems model is critical. Issues of a research nature (Calvert 1986; Moore 1985) have been described in recent literature on this topic.

There are four major components described in Figure 1. The first, discussed above, is the entry of question or problem into the model (labeled I). The second (labeled A–E) are the steps followed in the model as the researcher begins to deal with the problem/question and converts it into inquiry. The third (labeled Q.C. 1–4) are quality control points that prompt the researcher to consider the relationship between steps and whether the outcomes from one step justify continuing to another step. The fourth component (labeled II) represents the output from the model. Usually this is in the form of empirical or theoretical

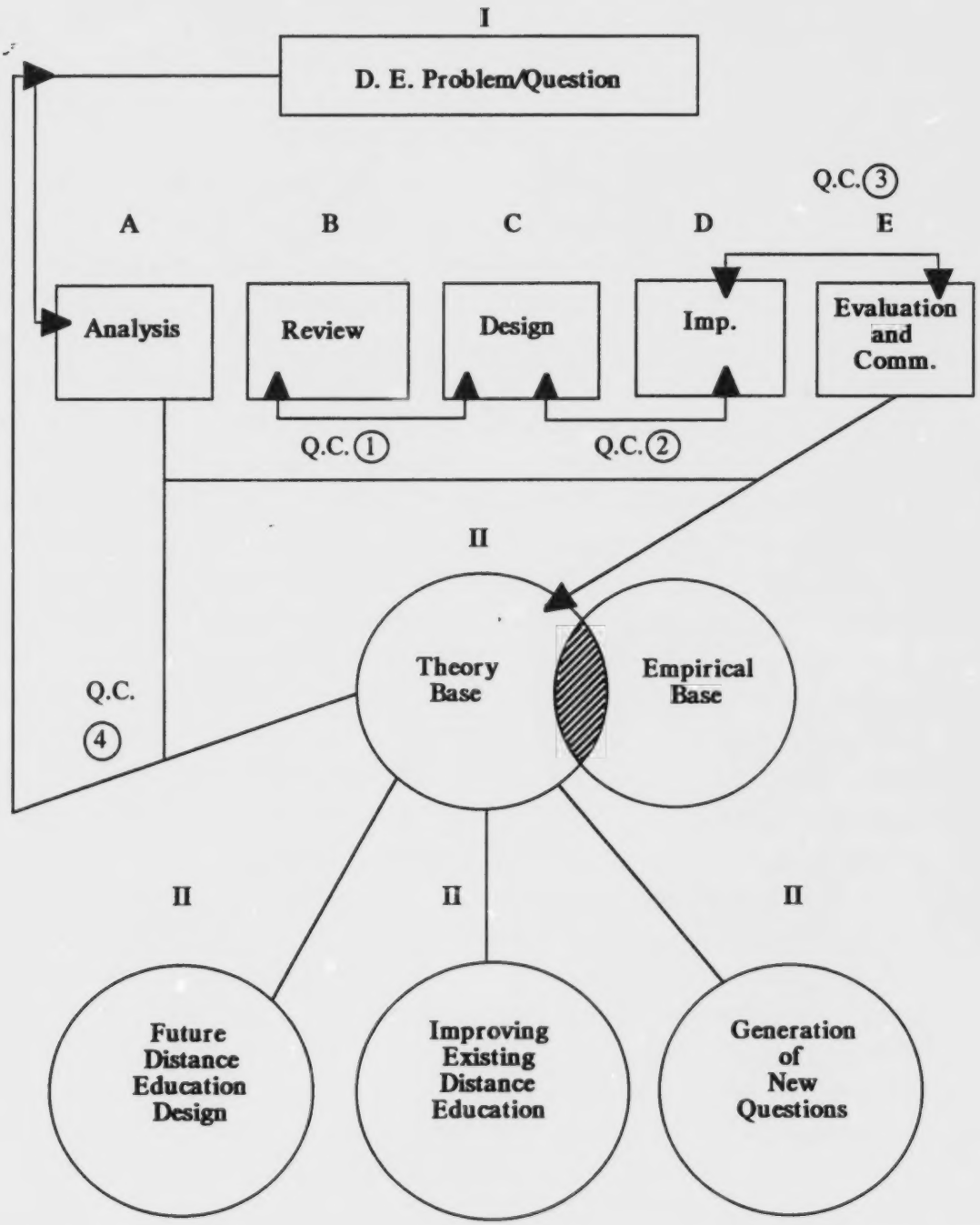

Figure 1. Components of a Systems Model for Inquiry into Distance Education

information that can be used to guide design of systems, improve existing practice, or generate new questions for inquiry.

Components two through four will be discussed below.

Steps in the Systems Model that Guide Inquiry (Component Two)

The steps in the model depicted in Figure 1 are similar to those described by general systems theory (Banathy 1968). The overall goal of the systems approach is to increase the probability that the end result will be more effective in approaching the question or problem being examined.

The first step is described as Analysis (labeled A). There are two types of analysis that are typically completed within this step. The first can be described as internal analysis. Questions like "Why research and not evaluation?"; "Is there a need for the research to be generalizable?"; and "How important is the data collected during this inquiry to institutional or organizational problems?" are some of the internal questions that should be addressed. The effects of empirical information on decision making and management, either in a direct or indirect way, should not go unnoticed by researchers. The second type of analysis can be described as external. Determining the relationship of the question/problem to existing theory; to the existing research and empirical base; and considering issues of cost, sampling, experimental design, etc., are critical forms of analysis at this stage.

The output of the analysis step are answers to internal and external questions that impact inquiry in any field of investigation, especially applied fields like distance education. The investigator should be able to at least consider these questions prior to spending time and effort on inquiry.

The second step is described as Review (labeled B). This step represents the standard step of literature review, review of related areas of research, and an examination of existing internal systems that support research. In some cases this step may also involve the justification of inquiry through an analysis of existing theory and research. It is also important during this phase to begin to consider experimental design as it compares to previous research and theory. Determination of factors like experimental error rate, sampling size in relationship to error rate, etc. (see Campbell and Stanley 1966 and Sidman 1960 for a discussion of these factors) is critical at this stage and can form the basis for effective experimental design. This is especially important in areas such as distance education when almost all inquiry will be of a multi-variate nature and may include several independent and dependent variables.

The third step is described as Design (labeled C). During this step a type of blueprint for research is created that describes the details of the inquiry and the surrounding organizational and planning efforts that will allow the inquiry to take place. The following represent some examples of the types of information contained in this blueprint:

- Functional (i.e., operational) definitions of dependent variables;
- A description of the research design;
- A list of potential sources of internal and external effects on validity (see Campbell and Stanley 1966 for a discussion of this problem);
- A description of the estimated magnitude of effects and hypothesized outcomes based on those effects and their effect size;
- A description of data collection procedures and data analysis techniques;
- A description of any proposed statistical techniques;
- A description of subjects and factors influencing sampling, subject selection, etc.; and
- Any other factors that influence the inquiry (e.g., budget, management issues, timing, need for equipment, etc.)

The fourth step is described as Implementation (labeled D). After the blueprint created in step C is satisfactory the inquiry can begin (step D). During this step the management of the data, collection of information, training of assistants, and a wide variety of data analysis tasks can begin. A majority of these issues should have been anticipated during the design step so that their implementation at this step is made clear.

The fifth step is described as Evaluation and Communication (labeled E). Essentially it is during this step that the results are analyzed in total and compared to anticipated results to form conclusions regarding the outcomes of inquiry. Activities such as report writing, review of results by external evaluation, comparison of results to hypothesized models or theoretical issues, and the generation of new theory can occur. It is also during this step that the consideration of future inquiry often occurs.

Quality Control Steps (Component Three)

In general the quality control points in the model serve to prompt the researcher to consider whether all relevant information is available, reconsider whether design issues are going to be effective in getting the information desired, and evaluate the influence of outside factors upon the inquiry. Since the type of quality control differs from step to step, a brief description of each of the quality steps is given below.

Quality Control step 1 (labeled Q.C. 1). The main question being addressed during quality control step one is whether the design of the inquiry relates to the existing information and research base examined during the review step (labeled B). Often this question can only be answered after all the factors in the design step have been carefully examined. Experimental controls and the clear definition of variables are two areas that require careful attention at this step

Quality Control step 2 (labeled Q.C. 2). This quality control step is included to prompt the researcher to consider the effects of implementation upon the design of research. Concerns regarding interference by experimenters, maturation of subjects, possible effects of instrumentation, etc., are addressed during this quality control step (see Campbell and Stanley (1966) for a detailed description of possible interference effects).

Quality Control step 3 (labeled Q.C. 3). Many researchers have discovered during implementation of their research that the results and/or procedures are not working out as anticipated. This quality control step prompts the researcher to consider whether the results are as anticipated and if so carefully consider the reasons to determine if real effects are being discovered. If the results are not as anticipated it often makes sense to consider why they are not so and what to do about it at this stage. The experiment can be scrapped or modified in some cases.

Quality Control step 4 (labeled Q.C. 4). During this quality control step the relationship of new results to previous research and theory are considered. In some cases successful research raises more questions than it answers. It is therefore possible to organize a set of new questions for future inquiry and/or fit the new results into a revised model or theory.

Making Use of the Results of Inquiry (Component Four)

As shown in Figure 1, the results of inquiry can feed into an overlapping theory and empirical base. This theory and empirical base can then drive at least three other activities. One activity is the design of distance educational systems. What we learn from distance educational inquiry may be useful in developing completely new approaches to distance educational practice. A second activity influenced by inquiry is the re-design or improvement of existing distance educational practice. Often researchers are ultimately interested in the improvement of practice and should not avoid making suggestions for improvements based on inquiry. Finally, inquiry should be instrumental in generating a new generation of distance educational questions. These questions may eventually set the occasion for future inquiry.

A Cautionary Note About Experimentation in Distance Education

Researchers should be aware that there are limitations to research in every field. Claims regarding the rate and amount of progress gained from research in distance education can often be overly optimistic. The researcher should avoid making grandiose promises and not undervalue non-experimental wisdom.

A somewhat related note of caution should also be made to the administrator or practitioner in distance education. Often these people must be willing to increase their time perspective. It is rare that one experiment will be the one answer to any problem. Inquiry in distance education is more likely to require multiple experimentation, replication, and cross-validation for prime effects and results to be useful in future distance education work. In addition, inquiry often creates outcomes that are not consistent with existing theory or practice. Although experimental inquiry is the most basic forum for proof and is one of the strongest ways of settling disagreement between rival theories, it is unlikely that a single experiment, no matter how well designed and executed, will be the final test. The recent development of meta-analysis (see Kulik, Kulik, and Cohen 1979 for an example) demonstrates the importance of looking at multiple experiments to determine overall effects even within a somewhat limited range of independent variables.

Methods of Inquiry Uniquely Suited to Distance Education

There is a considerable literature on methods of inquiry in education (Driscoll 1984; Coldeway 1988). Table 1 provides a list of some of the methods available.

Table 1. Methods of Inquiry in Education

- Quasi-Experimentation
- Meta-Analysis
- Case Study - Ethnography
- Cost Effectiveness
- Qualitative Research
- Triangulation
- Component Research
- Model Synthesis
- Systems Analysis
- Simulation Analysis

There are three methods that deserve additional attention when discussing inquiry into distance educational phenomenon. They will be discussed below.

Component analysis. Component analysis is research that attempts to determine the contribution of each component in a system to the success of the whole or to the effect on another component. Because many distance educational systems are comprised of multiple components, component analysis may be of particular interest to distance educational inquirers. For example, a researcher interested in learner motivation may look at the components hypothesized to effect motivation in a given system. Tutoring, feedback, and pacing could be examined as components and systematically varied to provide experimental evidence as to their relative contribution to overall effects. Much of the research done on Keller's Personalized System of Instruction (Keller 1968; Kulik, Kulik, and Cohen 1979) was an attempt to tease out the effects of the various components of that system of instruction.

Simulation analysis. Simulation analysis is research that uses previous results and information to build a model that can then be tested in a simulated state to determine effects. This type of research can be especially important in the determination of cost and cost effectiveness. For example, it would be possible to build a model of distance education from the results of Athabasca University's data on the completion rates of students working individually at a distance with telephone tutorial support and extend that to various student population sizes to determine cost effectiveness. Components could be added or deleted and, based on previous results, costs estimated according to student population size.

Systems analysis. This research compares the anticipated effects of a particular type of implementation plan to the actual measured effects. Often distance educational design decisions were made without the assistance of research or evaluation information. Entire systems could have been built without empirical support. It is then possible to determine empirically what effects those decisions are having and compare that result with what was anticipated. For example, the Athabasca University tutorial system was put into place with the anticipation that tutors would contact each student once each month. Tutors were given that responsibility and the system assumed that level of contact was being made. A direct measure of the effects of tutoring indicated that students were not being contacted every month but once every six weeks. The results of this type of research could then be used to estimate what effects tutoring may be having on learner motivation in reality as opposed to earlier anticipated levels of contact.

Conclusion

It is the underlying thesis of this paper that distance educational research is not only becoming more frequent and popular, but that it is coming of age. As a result, researchers are becoming more sensitive to issues of experimental design, validity, and generalizability of results. As these issues become central to research, so do issues of effective inquiry.

Although this paper has emphasized experimental inquiry as a prime methodology for research, it is not the only methodology useful in determining important results in distance education (or any field, for that matter). Well-planned qualitative and evaluation studies are useful contributions. Moreover, many of the issues discussed in this paper relate directly to issues in qualitative and evaluation type methodologies.

Distance educational researchers should be made aware of some of the problems that have existed in conventional educational research for years. There seems to be a proliferation of studies testing a cadre of hypothetical variables that appear to be only marginally related to the practice or improvement of teaching and/or learning either in conventional classrooms or through new technologies. This is especially the case with post-secondary education. It is unlikely that a major change in post-secondary teaching practices will occur through conventional educational research. Perhaps distance education will be just the catalyst needed to cause both a change in practice and a reexamination of research priorities in post-secondary education. The remaining areas of primary education, continuing education, professional education, technical education, and training will also be effected by distance educational research efforts if the current trend in this area is indicative of the future. We can only hope that the efforts of researchers in determining important factors in distance education and training will be of use in the continuing evolution of the field.

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PART III

On European Distance-Education Research

Börje Holmberg

On European Distance-Education Research

Börje Holmberg

Comments on research are necessarily selective and based on the writer's views of what is of particular interest. This inevitably means that there is an element of idiosyncrasy in the following presentation. Research that I do not mention may, from the points of view of others, be of as much interest as that which I do discuss.

It is often said that there is little research on distance education. This is a myth. A selective bibliography of mine which is being printed at present (Holmberg 1990a) lists about 1800 works of current interest and an international survey of research that is intended as a presentation of today's status includes more than 200 titles (Holmberg 1990c). Here, under seven headlines, follows a short report on European work that is, in my view, of particular relevance in 1990. In a few cases non-European evidence is used to supplement this report. All works referred to are listed at the end of the paper.

Surveys of Distance Education

The European Association of Distance Teaching Universities (EADTU) has carried out studies on its field of activity, i.e., on university distance teaching, including a scenario for the year 2000 (Trindade 1988), as part of which Tony Bates has realistically investigated a ten-year perspective of technology for distance education (Bates 1988).

Two international questionnaire studies carried out by the FernUniversität Institute for Distance Education Research (ZIFF) provide a mass of data from some 200 distance-teaching organizations concerning the actual characteristics of their institutions; the principles for learning and teaching adhered to; the teaching media applied and their tutoring, counselling, and assessment practice (Graff and Holmberg 1984 and 1988).

As a summary of the two FernUniversität studies the following findings should be stressed as particularly interesting.

Widening educational services to include new groups among adults is the most important goal of the organizations studied. They often stress innovative approaches and the dissemination of new technologies as another important aim.

A great number of media are used and astonishingly large sums are allegedly invested in media development. The number of staff engaged in media work is substantial in most cases.

Great interest in maintaining and developing student independence is expressed. A clear correlation between success rates and approaches favoring student independence was found. These approaches include individual (free) pacing of the study as to assignment submission, the possibility for students to influence the study content, and encouraging querying attitudes among them. The majority of the organizations studied do not pace their students but allow them to submit assignments when it suits their individual timetables. This seems to be a tangible sign of belief in the value of student independence.

The concerns of student independence to some extent overlap with what we call learner friendliness, a concept that requires personal counselling and tutorial services, help to attain success, frequent and easy contact with tutors (mediated or face-to-face), etc. Correlation coefficients between the learner-friendliness scores and success indicate also that these, some of these, or the application of the whole concept have favorable effects on students' success.

It is evident from the study that an important learner-friendliness factor is the use of submission assignments for learner support rather than for assessment purposes. Tutors' individual comments are elements of the score for 'individualized control,' which is a further indication of the overlapping of attempts to stress and promote student independence with those to apply learner-friendly approaches. The impact of personal communication–in distance education *nolens volens* mainly non-contiguous communication–on students' success and possibility to develop independence is evidently great.

An attempt to describe today's status of theory and practice is Holmberg 1989b.

Students and the Drop-out Problem

Attempts to find out how many distant students there are in the world on the basis of the FernUniversität studies referred to and other considerations lead to the assumption that we have to count with at any rate more than ten million. The total figure from the 200 organizations mentioned is six million, UNESCO counts with ten million, and data from China collected at the FernUniversität add staggering numbers. In the period 1982–1988, 1,045,000 Chinese distant students acquired degrees and two million distant students attained other formal competencies (cf. Xie 1989).

Attempts have been made to find out what types of students distance education suits best and who is most apt to benefit from distance education. So far we are hardly in a situation to give anything like a definite reply.

Studies by Bartels (1982 and 1983); Bartels, Helms, Rossié and Schormann (1984); Rekkedal (1972); and McIntosh, Woodley and Morrison (1980) point to the relevance of personality characteristics (e.g.,inclinations for individual work), age, previous education, and personal areas of interest. These studies are summarized in Holmberg (1990b, pp. 4–5).

The one single factor that is typical of the successful distant student is personal motivation (cf. Sewart 1983, p. 168). Masson (1987) favors, on the basis of reflections on Jungian typology, the hypothesis that distance education is more appropriate for students of the introvert type than for extroverts. So far this hypothesis has not been tested empirically.

How many students drop out and why they do so are problems engaging many scholars (e.g., Bååth 1984, Peters 1988). Peters's study reports on remarkably high drop-out figures at the large distance-teaching universities and analyzes four procedures for intervention. These are to find out by means of statistical investigations what groups of students are most likely to drop out; to find out why students drop out; to make clear what influence personal approaches and short turn-around times have; and, finally, to act on the basis of theory-guided longitudinal studies shedding light on such things as what factors function together, in what way, and what students' behavior is like after drop out. Peters's paper, written in German, includes a series of relevant data, references to other studies, and an interesting discussion.

Student Autonomy

The question to what extent student autonomy is possible in distance education has been carefully looked into in another German study (Weingartz 1990), which *inter alia* pays attention to the attempts made at Empire State College, New York; Murdoch University in Australia; and the Polytechnic of East London, e.g., to combine contract learning with distance education. The author underlines the applicability of procedures promoting student autonomy which are:

- Individual-centered through a learning contract;
- Group-centered through group interaction and peer learning; and
- Project-centered through problem formulation and solution (cf. Boud 1988).

A theoretically based practical application of student autonomy support is described by Elton, Oliver and Wray (1986). This is a small-scale, staff-development program developed at the University of Surrey in England for university lecturers in southern Asia. The purpose is "to provide training opportunities for academic staff who wish to acquire a

more professional orientation towards their function as teachers. The course is provided entirely at a distance and leads to a Diploma and M.Sc. with the possibility of continuation to MPhil/Ph.D." (Elton, Oliver, and Wray 1986, p. 29). The course consists of both compulsory and optional modules, it includes a fairly comprehensive project on a theme chosen by the individual course participants, and there is a strong element of interaction in the form of correspondence between tutors and students. There is consistent individualization, as the aim is to make "the course particular for each member" (op.cit. p. 30). In this way each student strongly influences the content of the study.

Communication

Communication in distance education is a research area to which many contributions have been made and more are to be expected. The possible impact of the communication frequency, i.e., how often, in relation to the amount of learning matter, students are invited to submit assignment for correction and comment has been carefully studied by Bååth (1980), whose study was replicated by Holmberg and Schuemer (1988 and 1989). In spite of the plausibility of the assumption that frequent communication promotes learning neither of these studies have resulted in any statistically significant support of it. A discussion of the problem on the basis of empirical research occurs in Holmberg (1989a), which contains contributions also by Bååth, Diehl, and Rekkedal as well as the Holmberg and Schuemer study mentioned. The quality rather than the frequency of communication seems to be decisive (cf. also Thompson and Castro 1988).

The importance of short turnaround times (from students sending an assignment to the supporting organization until the assignment has been returned with the tutors' corrections and comments) has been seriously looked into by Rekkedal (1983); Barker, et al. (1986); and Diehl (1982, 1989a, and 1989b). While Rekkedal's study showed that completion rates correlated with turnaround times (a statistically significant finding), Diehl has come to a different conclusion and Barker et al. only partly confirm Rekkedal's findings. There is uncertainty about what, in different contexts, constitutes delayed feedback and about the time element with other factors. This is discussed in Holmberg (1989a). There is no doubt, however, that delayed communication can be a great weakness of normal distance education. The possibility to use PCs, modems, and telephone communication (so-called electronic mail) to attain immediate reception, both of students' assignment papers etc. and of tutors' corrections and comments, will undoubtedly bring about considerable improvement as soon as the cost for equipment can be afforded by students and

organizations. The organizational and technical developments in this respect will be an important research topic (cf. Scriven 1988; Mason and Kaye 1989).

Information Technology

The use of technology in distance education is a topic that attracts much attention among both practitioners and researchers. This applies, on the one hand, to one-way traffic (video productions, computer presentation of learning matter, etc.) and, on the other hand, to both simulated and real communication (the former as applied, for instance, when students interact computer program, the latter when, for example, electronic mail and telefax are used for undelayed tutor-student and student-student interaction or asynchronous communication is catered for by computer conferencing). At least two recent, very important European studies of an overarching character are to be mentioned in this context (Bates 1990; Mason and Kay 1989). They provide valuable information about today's status of technology in distance education and include discussions of a great number of applications. Several interesting research and development projects have been reported (e.g., by Paulsen and Rekkedal 1990).

Evaluation

The type of evaluation that is not primarily concerned with assessing the achievements of students and awarding marks but rather with the estimation of distance courses and systems of distance education has attracted much attention. Useful approaches to the evaluation of distance education systems is presented in Rumble (1981a and b). Formative evaluation in the form of developmental testing as part of course creation has been described and discussed by, among others, Henderson and Nathenson (1976) and Bartels and Wurster (1979) (the latter in German). The methodology of evaluation has been looked into, from a mainly technological point of view, in chapter four of Holmberg (1989b) and in a way critical of rationalization approaches by Kemmis (1980), (cf. also Evans and Nation 1989); the latter two works are of Australian provenance. The evaluation of distance education naturally relies largely on principles developed for educational evaluation generally. Scriven (1967) and Stake (1977) have been particularly influential. A most useful handbook for distance educators is Thorpe (1988), in which more attention is given to the evaluation of tutoring and counselling than in other contributions. A forthcoming publication by Schuemer, to be published by the FernUniversität (ZIFF) in Germany, which includes presentations by Ganor and Lehmann on the advanced evaluation systems

of the Open University of Israel and Empire State College in the U.S., promises interesting and constructive approaches, some of which are so far little known.

Other kinds of evaluation are mainly focused on the economics of distance education, e.g., Wagner (1977), Snowden and Daniel (1980), and Perraton (1982). Keegan (1990) summarizes much of this research. There is fairly general agreement that distance education can offer considerable financial advantages.

Theory

The term theory is used with several different meanings. If–as understood by the present author–distance-education theory is meant to guide practice, it should:

- Have internal consistency as a logical system;
- Establish functional relationships between the teaching and the outcomes of learning;
- Be capable of generating specific hypotheses and predictions; and
- Be expressed in such a way that research data capable of possibly refuting (falsifying) the theory can be collected.

An early attempt to develop a decision model on the basis of the structure and process of distance education was made by Kurt Graff. However, he concluded that the great problems are beyond calculation (Graff 1970, 54).

Hilary Perraton (1981, 1987) has ventured other suggestions as steps on the path toward a theory of distance education, and so has the present author in applying hypothetico-deductive methods. Perraton (1981) bases his arguments on a view of education as connected with power and makes a case both for expanding education as an egalitarian requirement and for stressing the importance of dialogue. His contribution to a theory of distance education is in the form of fourteen hypotheses or statements. Perraton finishes his theory paper by asking if his formulation of hypotheses suggests "ways of testing them which would yield useful knowledge for practical educators" (p. 24).

This question of testing is a concern that has caused me to scrutinize my assumptions about the impact of what I have called an empathy approach and a theory of didactic conversation. The testability of hypotheses derived from a theory seems to me to be a *sine qua non* if theory building of the type discussed is attempted. Let us look into hypothesizing and testing using (this part of) my theory presentation. It can be epitomized as follows:

Central to the learning and teaching in distance education are personal relations, study pleasure, and empathy between students and those representing the supporting organization.

Feelings of empathy and belonging can be developed in the learning process independently of any face-to-face contact with tutors. They are conveyed by students' being engaged in decision making; by lucid, problem-oriented, conversation-like presentations of learning matter that may be anchored in existing knowledge; by friendly, non-contiguous interaction between students and tutors, counsellors, and other staff in the supporting organization; and by liberal organizational-administrative structures and processes. This theory attempt has generated a series of hypotheses about distance learning, distance teaching, and the organization and administration of distance education. They are all testable (falsifiable), and some of them have been tested.

I am immodest enough to give some space to this as it seems to be the only attempt to test a predictive distance-education theory. (cf. Covill-Servo and Hein 1983, p. 305 who state that "instructional theory is still in its infancy.") The authors quoted have found little theory building meeting requirements resembling those worded above. The one exception they mention is Philip Hosford's deductive theory (Hosford 1973). My theory attempt is, of course, also deductive and so far stands alone, or doesn't it?

However, there is little hope (or fear) that any scholarly theory or agglomeration of theories would ever be able to give enough sufficiently detailed prescriptions to allow us to state, as a reasonably acceptable rule, that all practice in education (distance education) can be consistently guided by theory. One reason for this is the impossible expectation of an unfailing cause-effect relationship in human behavior. Another reason is the need to meet unforeseen requirements. This does not mean that we should refrain from predictive theories, however, even though we concede that prediction in our case is concerned with probable rather than inevitable outcomes.

What has just been said indicates a need for epistemological awareness and considerations of what constitutes knowledge, how it is acquired, and how findings can be tested. An analysis of these questions occurs in Holmberg (1990b). An international discussion of this concern is overdue.

Further Research

Much can be added to this succinct report. Some more material of an international character is provided in Holmberg (1990b).

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PART IV

Appendices

Appendix I

Research in Distance Education: Setting a Global Agenda for the Nineties

A Preconference Workshop presented by The American Center for the Study of Distance Education

The objectives of this workshop are 1) to exchange information on current research initiatives around the world; 2) to lay the foundation for future collaborative research; and 3) to help ICDE formulate a research agenda for 1990-1992. It is hoped that some participants will qualify to receive preliminary ICDE funding.

November 2-4, 1990, Hotel Macuto Sheraton, Caracas/LaGuaira, Venezuela

Conference Program

Day 1–Friday, November 2

12:30 - 13:00 **Welcome**

Armando Villarroel, World Conference Manager
Michael Moore, Director, American Center for the Study of Distance Education, and Vice-President, ICDE.

Workshop overview.

13:00 - 14:30 **The World of Research, Part I**

Overviews of research around the world.

Europe: Börje Holmberg,
International Survey: Dan Coldeway
South America: María Teresa Arias
U.S.A.: Michael Moore
Australia: Michael Parer
Asia: Kuldip Rampal

14:30 - 15:00 **Break**

15:00 - 16:30 **The World of Research, Part II**

16:30 - 17:30 **What's Missing, What's Needed?**

In small groups, each with a reporter, participants will discuss what research is needed worldwide. The groups' reports will be collated by workshop organizers and presented at dinner.

17:30 - 19:30 **Dinner**

19:30 - 20:30 **Special Interest Groups**

Participants will meet in groups of persons interested in the various research areas identified earlier. Individuals may identify others with whom they are interested in developing a collaborative research project.

Day 2–Saturday, November 3

9:00 – 11:00 **Workshop on Methods**

9:00 – 10:00 **Session I** (four topics)
10:00 – 11:00 **Session II** (all four topics repeat)

Discussion of methodological issues. Participants are invited to choose one of the topics to attend in each of the sessions.

1. **Design & implementation of experimental research.**
   Dan Coldeway and Cynthia Weston
2. **Qualitative research methodology.**
   Liz Burge
3. **Analyzing your data.**
   Fabio Chacón
4. **The literature review & theoretical framework.**
   Peter Cookson and Michael Moore

11:00 – 11:30 **Coffee Break**

11:30 – 12:30 **Collaborative Planning Session I**

A major purpose of the workshop is to give participants an opportunity to propose research projects they would like to work on in collaboration with others. This is the first structured opportunity to discuss and plan such projects.

12:30 – 14:00 **Lunch**

14:00 – 15:30 **Computer Communications Networking**

Much of the communication about international collaborative research in the 1990s will be by computer conference.

1. **How the technology works.**
   Chris Clark
2. **Types of application.**
   Morten Paulsen
3. **Current uses in distance education.**
   Robin Mason

15:30 – 16:00 **Break**

16:00 – 18:00 **Collaborative Planning Session II**

18:00 – 20:00 **Dinner**

The American Journal of Distance Education

20:00 – 22:00 **Fiesta**

Entertainment by the pool

Day 3–Sunday, November 4

9:00 - 10:00 **Publishing Your Work**

A presentation and discussion by editors of leading journals.
Ian Mitchell, *Distance Education*
Michael Moore, *The American Journal of Distance Education*
Alan Tait, *Open Learning*

10:00 - 10:30 **Coffee Break**

10:30 - 12:00 **Proposing an Agenda for the 1990s**

The workshop has identified needs and provided opportunities to discuss means of researching those needs. In this final session participants will be invited to present the results of their discussions.

13:00 **Departure for Caracas**

Workshop Organizers

Michael Moore
Peter Cookson
Lauren Lukert
Chris Clark

On-site Support in Caracas

Morten Paulsen
Phil Pinder

ACSDE Staff

Margaret Koble
Alan Lerch
Ed Desautels

Appendix II

Research Questions Arising From: The ACSDE/ICDE Preconference Workshop

Caracas, Venezuela November 2–4, 1990

The following questions are not listed in order of priority.

Question 1. **Action research:** Pilot project to design, deliver, and evaluate a global course on computer conferencing, delivered by distance education.

Question: Is such a course possible? What are the potential difficulties?

Team Members:

V. Madan	India	Margalit Ganor	Israel
Morten Paulsen	U.S.A.	George Boughton	Guam
Tony Bates	Canada	Jorgen Bang	Denmark
Peter Cookson	U.S.A.	Fuwen Gao	China
Anne Benko	Venezuela	Liz Romero	UNA/Venezuela
Toni Garcia	U.S.A.		

Question 2. **Meta-research:** What are the underlying values and assumptions of distance education researchers (variables, paradigms, etc.)?

Method: Special issue of a journal, published dialogue.

Team Members:

Dan Coldeway	Canada	Kuldip Rampal	CMSU/U.S.A.
Liz Burge	Canada	Ramona Akl Brittar	UNA/Venezuela
David Murphy	Hong Kong	Arlette Machado	Venezuela

Question 3. Comparative analysis of distance teaching institutions attempting technological change/innovation: Factors of success/failure, barriers to innovation, innovation strategies.

Method: Identify three–five institutions, involve research students and hire a coordinator.

Team Members:

Tony Bates	Canada	Anne Benko	UNA/Venezuela
Howard Karnes	U.S.A.	M. J. Mahoney	UNE/Australia
G. Boughton	Guam		

Question 4. Which components of a distance education system affect planning?

Sub-questions: What are the values and beliefs underlying public policy? What are the social, economic, and political contexts in which political decisions are made? How is power exercised through the choice of media and delivery systems? To what extent are policy decisions sensitive to cultural differences?

Team Members:

Howard Karnes	U.S.A.	John Wolforth	Canada
A. H. Joseph	Argentina	Arlette Machado	Venezuela
Tony Bates	Canada	Tony Garcia	U.S.A.
David Kahn	U.S.A.	M. J. Mahoney	UNE/Australia

Question 5. **Meta-research:** How do you train distance education researchers and orient consumers of distance education research?

Method: a) Send Australian course on research in distance education to a range of people for review, and publish the resulting discussion and b) Develop criteria to cover a range of factors in distance education research.

Team Members:

Dan Coldeway	Canada	Michael Parer	Australia
Arlette Machado	Venezuela	Helen Buckley	West Indies
R. A. Brittar	Venezuela	Ian Mitchell	Australia

Question 6. What are the implications of a student's life experiences as curriculum in distance education?

Method: Context of phenomenology (diary and interviews).
Participants: Institutions on several continents.

Team Members:

Michael Parer	Australia	Liz Burge	Canada
Renu Bhardwaj	India	V. Madan	India
Kuldip Rampal	India	Juan Melendez	Puerto Rico

Question 7a. A comparison of methodologies and techniques of distance education in small island countries (Pacific and Caribbean)

Method: Document analysis, surveys, interviews.
Focus on: Bahamas, Guam, St. Lucia.

Question 7b. The representation of women in distance education course material.

Method: Content analysis.
Focus on: Columbia, Germany, Canada, India, Kenya, Guam

Team Members:

Howard Karnes	U.S.A.	George Boughton	Guam
Helen Buckley	West Indies	Gisela Pravda	Germany
Liz Burge	Canada	Asha Kanwar	
David Kahn	U.S.A.	Judith Ekins	Hong Kong
Renu Bhardwaj	India	Juan Melendez	Puerto Rico

Question 8. What are the personal, institutional, instructional and contextual factors which influence student performance in distance education?

Method: Multivariate analysis of five institutions in three countries.

Team Members:

Alberto Gibbs	**Venezuela**	**Margalit Ganor**	**Israel**
Liz Romero	**UNA**	**Caruiai Avarez**	
Arlette Machado	**Venezuela**	**Renu Bhardwaj**	**India**
Maria Bermudez	**Venezuela**	**Helen Buckley**	**West Indies**
Asha Kanwar		**R. A. Brittar**	**UNA/Venezuela**
Judith Ekins	**Hong Kong**	**Kuldip Rampal**	**India**
Socorro Peraza	**Venezuela**	**Andrew H. Joseph**	**Argentina**
Peter Cookson	**U.S.A.**	**Anne Benko**	**UNA/Venezuela**
G. Boughton	**Guam**	**E. Fagbamiye**	**Nigeria**

Small Groups:

Group A

Reporter: Maria Teresa Arias (Columbia)
Cheryl Amundsen (Canada)
Joregen Bang (Denmark)
Maria Bermudez (Venezuela)
Peter Cookson (USA)
Judith Ekins (Hong Kong)
E. O. Fagbamiye (Nigeria)
Heidi Hahn (USA)
Unni Hovstad (Norway)
Michael Parer (Australia)
Gisela Pravda (Germany)
Jamuna Thiagarajan (India)

Group B

Reporter: John Bajtelsmit (USA)
Alvaro Aspee (Chile)
Ramona A. Bittar (Venezuela)
Marjorie Brathwaite (St. Lucia)
Liz Burge (Canada)
Dan Coldeway (Canada)
William A. Mason (USA)
Ian Mitchell (Australia)
David Murphy (Hong Kong)
Morten Paulsen (Norway)
Phil Pinder (Bahamas)
Armando Villarroel (Venezuela)
Roger Webb (United Kingdom)

Group C

Reporter: Helen Buckley (St. Lucia, W. I.)
George Boughton (Guam/USA)
Fabio Chacon (Venezuela)
Anne Forster (Australia)
Fuwen Gao (P.R. China)
C. M. Jain (India)
David Kahn (USA)
Robin Mason (UK)
Michael Moore (USA)
Socorro Peraza (Venezuela)
Alan Tait (UK)
Cynthia Weston (Canada)
John Wolforth (Canada)

Group D

Reporter: Roger Mills (UK)
Tony Bates (Canada)
Chris Clark (USA)
Margalit Ganor (Israel)
Alberto Gibbs (Venezuela)
Börje Holmberg (Germany)
Andres Hamilton Joseph (Argentina)
Howard "Buck" Karnes (USA)
Susan Leslie (USA)
Mary Jane Mahoney (Australia)
Kuldip Rampal (India)
Carmen Suarez (Venezuela)
Lorraine Wilson (Canada)

Appendix III

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16th ICDE WORLD CONFERENCE

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Keynote Speakers:
Dr. David Sewart, President of ICDE and Director, Regional Academic Services, Open University, UK
Mrs. Simone Testa, Minister of Education for the Seychelles
Ms. Lucille Pacey, Vice President of the Open Learning Agency in British Columbia, Canada
Dr. Chaiyong Brahmawong, School of Educational Studies, Sukhothai Thammathirat Open University, Thailand

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3. Distance Education, Literacy and Basic Education
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5. Development of Distance Education Materials
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7. Applications of Technology
8. Distance Education and Open Learning
9. Planning and the Future

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